

## ABSTRACT

[0107] Several types of DNA cuts are used as markers of apoptosis for detection of apoptotic cells *in situ*. The present invention includes a method to detect DNase II type DNA damage, bearing 5'OH using vaccinia topoisomerase I. The present invention also includes a method combining a ligase-based method to detect DNase I type DNA damage and the topoisomerase based method, resulting in simultaneous detection of two specific types of DNA damage *in situ*.

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